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PHYSIOLOGY

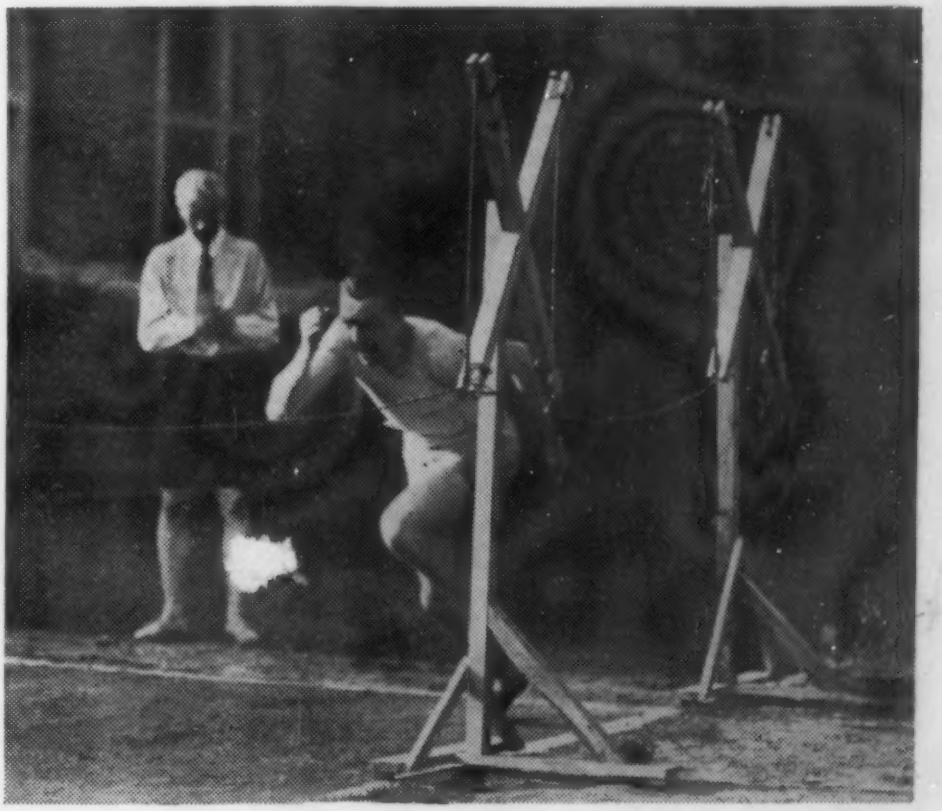
Science Now Helps Train Winning Athletes

By Haldane Gee

Track men can now predict their probable chances of breaking records. Henceforward, sprinters who win will not merely be in "good form," nor those who fail, simply in "poor form." Coaches will no longer view the star performer of the meet with reverence as an inspired creature, or one part greyhound for the occasion. Instead they will be checking back impersonally on tables of figures and sheets of diagrams, to find out what the overvoltage was that gave the extra driving power to the human motor, or how the friction factor fell and permitted a higher speed from the same energy. Becoming assistant physiologists for the winter, the coaching staff will be provided with advance dope based on the results of refined research in a new running track laboratory, and they know where to expect the breaks.

The genius behind this application of science to athletics is Dr. A. V. Hill, physiologist of University College, London, and research professor of the Royal Society, who for the time being is visiting lecturer in chemistry at Cornell University, and himself an athlete. Dr. Hill's special field in experimental biology has to do with muscular exercise. For years he has been studying the physical processes and the chemical reactions which go on in contracting, fatigued and recovering muscle; the nature of the impulses sent along the nerves which bring the muscle into play; the mechanical work which the human engine can produce from the fuel it eats; and how the breathing, and circulation of the blood set the drafts and flues for burning that fuel. In 1922, one of the highest possible forms of recognition that can come to a scientist was accorded him when he was given a Nobel prize in medicine.

Heretofore laboratory experiments have furnished most of the information which Dr. Hill is seeking. To study fatigue in muscle, he and his friends turn chemists and analyze animal tissues for their lactic acid load. Busy with nerve impulses, they become physicists and measure the infinitesimal rise in temperature which occurs in a nerve thread when a signal passes along it. Some of the data have been obtained by following the respiration of dogs and other animals (even cockroaches) kept in chambers which permit analyzing the air breathed in and out, and in this way the extent and nature of chemical change in the animal's body is revealed. Other tests are made on men running up and down stairs and riding stationary bicycles.



C. M. WESLY, captain of the Cornell track team, starting on a run by the coils.

Again, much has been gleaned from the published statistics on sport and racing. These records, Dr. Hill points out, are really reports of experiments on muscular exertion. By a scientific study of them he has not only supplemented his laboratory work with figures for maximum work and effort for human beings, but he has also discovered relationships of value to both athletes and their trainers in preparing for future contests. The tests on the Cornell athletes are an extension of this line of attack. With the stadium facilities of the university at his disposal and cooperating with the coaches, Dr. Hill has been able to

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Science Helps Coaches

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show that the speed of short distance runners is governed by two measurable factors. Sprinters were selected because previous work had already dealt with the limiting factors in long-distance running.

Ordinarily the only record kept for sprints is the elapsed time in which the distance is covered. While this gives the average speed of the runner over the whole stretch, it tells nothing about the rate of "pick up" or acceleration. Dr. Hill wanted to know this, so he fitted up his running track with an electrical device analogous to that used for measuring the muzzle velocity of shells during the war. At intervals along and parallel to the cinder path he set up coils of wire of 200 turns, connected to a sensitive galvanometer which recorded the tiniest currents on a drum run by an electric motor and placed in a nearby room. The athlete under test carried a small magnetized strip of steel tied round his waist which induced a current in each of the coils as he flashed past—an adaptation of the old observation in electricity and the principle of the dynamo, that a magnet waved near a closed coil produces a current. The devices used were so sensitive that they gave the runner's time of arrival at each coil to within one two-hundredth of a second. The time of the starting signal was registered with equal precision. Dr. Hill used ten coils, spaced closer at the start and more widely the rest of the way, to get the exact fractions of time in which each part of a 60, 100, 150 or 200 yard run could be covered.

Like Falling Raindrop

The figures showed that the sprinter's speed increased rapidly in the first few yards, and continued to increase up to about 30 yards; then it kept uniform, at presumably the high-

(*Continued on page* 373)

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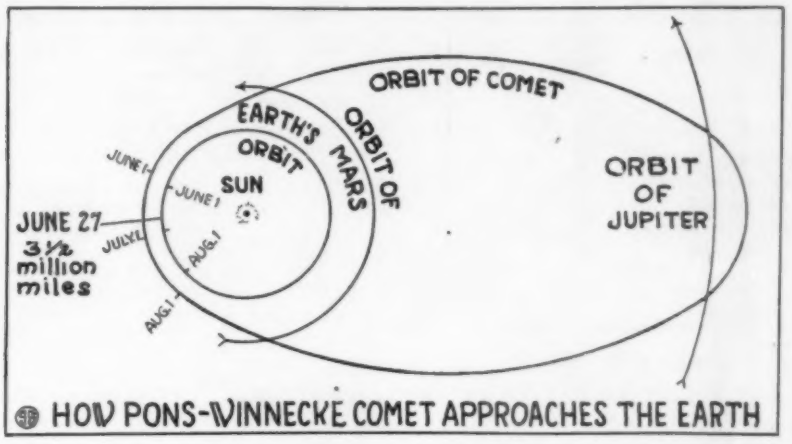
ASTRONOMY

Comet Close, But Won't Affect Earth



By James Stokley

Closer to the earth than any comet, except one, is known to have come before, the Pons-Winnecke comet will be only 3,500,000 miles away from us on June 27, about fourteen and a half times as far as the moon, and far closer than any other astronomical body ordinarily comes.

But despite this neighborly visit, no empires will fall because of its proximity, no kings will pass away, or at least, if they do, their passing will have nothing to do with the comet. In fact, no signs at all are likely to appear in the sky, for it is quite doubtful even whether the comet will become visible to the unaided eye. If it does, it will just barely be visible on a dark night as a faint patch of light, quite different from the usual conception of a comet, for in the ten previous visits on which it has been observed by astronomers, it has never shown any trace of a tail.

The mere fact, however, that it is coming so close makes it interesting to the astronomical profession, and for the next month or two it will be the cynosure of telescopes large and small. Only once, so far as astronomers know, has a comet come anywhere near as close as Pons-Winnecke. That was in 1770, when Lexell's comet approached to a mere stone's throw of 1,400,000 miles from the earth. Probably within a few years after that, many people thought that it had been a warning of the American Revolution, for until comparatively recent times superstition about comets has been rampant. They were supposed to be the heralds of wars and conquests.

Foretold Norman Conquest?

Halley's comet, for instance, which visited the neighborhood of the earth last in 1910, was supposed to foretell the Norman Conquest when it came in 1066. On the famous Bayeux Tapestry the comet is depicted as King Harold views it in alarm, possibly with some fear of the future work of William the Conqueror, which cost him his throne. And then, as Halley's comet appeared again in 1910, these early historians would probably have supposed that it foretold the Great War.

Halley's comet is one of respectable size, even though it is by no means the biggest. Pons-Winnecke, however, is rather a second-rate comet, as far as size is concerned. It is a periodic comet, and returns once in a little over six years to the neighborhood of the earth. A French astronomer at Marseilles, named Pons, discovered it in 1819, but it was not found on the next few visits. In 1858, however, a German astronomer, at the University of Bonn, Winnecke by name, discovered a comet. After a few observations of his comet had been made, it was found that it was the long-lost Pons comet, and in honor of his having rediscovered it, the German's name was attached, making it the Pons-Winnecke comet.

In the following years, constant track has been kept of it, though some of its returns have not been observed. It was seen in 1869, 1875, 1886, 1892, 1898, 1909, 1915 and 1921. It came back also in 1880 and 1904, but in those years it was not in a good position, and so it was missed. This year an American astronomer had the honor of being the first to find it, for Prof. George Van Biesbroeck, of the Yerkes Observatory of the University of Chicago, sighted it on March 3 with the observatory's reflecting telescope, in which a dish-shaped mirror two feet in diameter serves the

(Just turn the page)

HYGIENE

Relief Work Like War

Pestilence, riding the crest of the Mississippi Valley flood, is being battled by health and sanitation forces on a scale unparalleled in the peace-time history of this country. Reminiscent of measures instituted during the World War in army camps and refugee centers is the gigantic program being advanced by the American Red Cross and cooperating agencies.

Dispatches daily to national headquarters of the Red Cross here state that 95 per cent. of the total population of the flood area have had at least one injection of typhoid serum and that half a million will be immunized against smallpox and typhoid before the close of emergency relief work.

Dr. William R. Redden, Red Cross medical director, states that 8,000 are being vaccinated daily against smallpox and 10,000 against typhoid. Thousands have been given quinine doses as a precaution against malaria and between 6 and 7 tons of quinine will be administered for this purpose as mosquitoes begin to breed in the stagnant back-water.

Ninety-two nurses, 58 doctors and 30 sanitary engineers are on duty in the seven states affected, according to Dr. Redden, and as a result outbreaks of disease are being checked satisfactorily, with actually less disease, in Dr. Redden's opinion, than under normal conditions.

Following a recent meeting in Memphis, relief base, attended by health and sanitation experts of the Red Cross, American Medical Association, U. S. Public Health Service and other agencies, plans were announced to take care of sanitary conditions made acute by the recession of the flood in Arkansas and Mississippi.

Dr. Redden wired headquarters that an exhaustive survey of the terrain was made during the week which showed that Arkansas has 15,000 head of dead livestock and Mississippi 25,000. To neutralize this menace, 50,000 pounds of chlorinated lime will be used in the two states and one carload of dehydrated lime per county in addition. One carload of crude oil per county will be spead over stagnant waters to prevent the maturing of mosquito larvae.

Emergency county health units are being established in the two states, through which the Red Cross will carry on a concentrated battle against

(Just turn the page)

Relief Work Like War

(*Continued from page 367*)

disease, lasting from 30 to 60 days.

Maneuvers of the health forces are often spectacular, involving the use of airplane and radio. A call for typhoid and smallpox serum from Winnsboro, La., brought into action a Coast Guard airplane which set out from Natchez. It was necessary for the pilot to transfer to a train at Clayton, getting as far as Sicily Island, where the flood blocked rail travel. The guardsman procured a second-hand car in which he proceeded within two miles of his objective. Forced to abandon this he advanced on foot through water always knee-deep, sometimes deeper, arriving after nightfall with the supplies.

"Serious epidemic dysentery; must have medicine immediately." Across 60 miles of ether this message was flashed to Red Cross headquaters at Memphis. Within half an hour a Navy seaplane, loaded with the medicine, headed for Bruin, Arkansas. An hour later doctors in the camp were administering it. Without a plane it would have taken several days of tedious travel and it is probable that many lives would have been lost.

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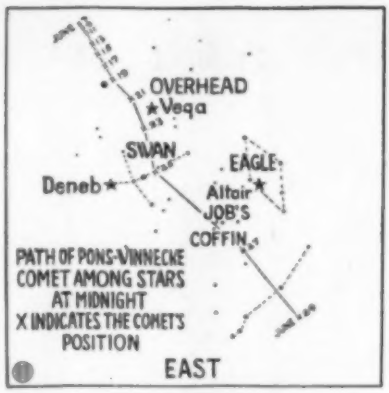


Pons-Winnecke Comet

(*Continued from page 367*)

same function as the lens of the refracting telescope.

The accompanying diagram shows how the comet comes so close. Its path is an ellipse, one end of which is near the sun, the other out beyond the orbit of Jupiter, which is itself 483,000,000 miles from the sun. When closest to the sun, at what the astronomer calls perihelion, it is just a little farther away from that luminary than we are. The earth is about 93,000,000 miles from the sun, and the comet is about three and a half million miles farther. This year it happens that the comet comes to perihelion at about the same time that the earth is in the part of its orbit nearest the comet's orbit. If it were coming six months from now, then the earth would be on the opposite side of its orbit, and the comet would be about 190,000,000 miles away.

Earth Has Little Effect

But the earth, as a matter of fact, has very little effect on a comet. Out in the part of its orbit farthest from the sun, even a large comet, like Halley's, is very faint and inconspicuous, entirely invisible to the best of our telescopes. And then, as it approaches the sun, it is excited to activity and may get very bright if it comes very close to the sun, though all this is at its own expense. The tail and all the stuff that is thrown off from the comet leaves it, never to return, so that comets are all gradually wasting away. Without doubt, the day will finally come when Halley's comet will be no more.

Pons-Winnecke, however, will not come any nearer to the sun than it has in past years, about 96,000,000 miles from it, and so it will not get particularly excited about the proximity of such a relatively unimportant planet as the earth. Even when it gets near Jupiter, largest member of the solar system, it is not excited to activity, though that big planet can, by his gravitational attraction, pull the comet out of its old orbit and into a new one if it gets too close.

How A Comet is Made

Just what a comet consists of is not definitely known, but whatever it is, the stuff is very sparsely scattered. It is really no denser than the vacuum obtainable with the best of our air pumps. Stars can be seen in undiminished brightness through even a comet's head, and even when a comet has passed between us and the sun, it has been entirely invisible. But the spectroscope often shows carbon monoxide, the same poisonous gas that is given off by automobile exhausts, in a comet's tail. Other gases, many of them poisonous, have been found in comets as well, but since they are so exceedingly rarefied, the people of the earth would probably not be poisoned even if we have a head-on collision with a comet. Perhaps the only effect would be a shower of meteors, or shooting stars, if the collision occurred at night!

The other diagram shows the path of Pons-Winnecke during June. Near the 27th it will be easy to see in the position shown with a small telescope or possibly even a pair of opera glasses and, perhaps, with the naked eye. The map indicates the sky for midnight of the 15th. Then the word "overhead" will mark that part of the sky. To locate the stars shown on the diagram, start off with Vega, almost overhead. The huge triangle this star forms with Deneb, to the northeast and Altair, to the southeast, is a convenient reference figure, and the comet passes right through it. The numbers next to the crosses show the dates on which the comet is in each of these positions. Notice that the crosses are farther apart as the comet gets near to the earth on June 27, even though the crosses are all at two-day intervals. This effect is the same as that of a locomotive, which seems to be moving much faster as it rushes past us than it did when we saw it a mile down the track.

Science News-Letter, June 11, 1927

The parrot fish has a strong beak-like mouth.

The Sumerians who lived near the Tigris and Euphrates Rivers made wheels for their chariots as early as 3000 B. C.

A machine which projects extremely powerful rays to penetrate fog is designed to make navigation safer in bad weather.

Environment Shown Great Cause of Insanity

On this page, Emily C. Davis describes some of the outstanding advances in knowledge of mental and nervous diseases which were reported at meetings of the American Psychiatric Association, the American Orthopsychiatric Association, The National Association for the Study of Epilepsy, the American Psychopathological Association, and the American Psychoanalytic Association, at Cincinnati during the week of May 30.

Environment, rather than heredity, is shown to be the great cause of insanity, according to a remarkable investigation announced by Dr. L. Vernon Briggs, of Boston. Dr. Briggs has collected facts on 28,000 people who died in the past fifty years in the sand dune shore country of Cape Cod. This fishing region has had practically all American stock for generations. Records of doctors, churches, courts, hospitals, even old gravestones with frank statements of suicides and diseases, have been laboriously searched for clues to insanity.

Over 3,000 deaths from diseases of the central nervous system were found, and over 1,000 had been in a state hospital for mental disease. Only eighteen per cent. of the thousand were descended from insane parents and only thirty-seven per cent. had insane relatives. This investigation, which has taken fifteen years, is the first to reveal a clear picture of insanity through several generations in a community.

Homes Are Important

Striking evidence that a large proportion of boys and girls who go wrong might have grown up into substantial citizens if their home life had been different was presented by Dr. William Healy, of Boston. Dr. Healy stated that he has followed the careers over ten years of 500 children who were taken from their own inadequate homes and placed with foster parents. All the children were normal mentally but all were considered extremely difficult behavior problems. Ninety per cent. have made good in their new homes, thus showing the importance of environment in the behavior of children, he stated.

Background of Crime

Does a certain combination of character traits and home experiences lead one child to steal while a different group of factors would have led him to destroy property? To answer this, a method of classifying several thousand factors in a child's personality, heredity, conduct, and home life has been evolved by Dr. Luten Ackerson, of the Institute for Juvenile Research, in Chicago, so that a child who comes to the behavior clinic can be identified as having certain traits and home conditions. When a sufficient number of records are obtained, it may be possible to predict the career toward which a troublesome child is heading before he gets into serious difficulties.

Too Much Emotion

The part played by a child's unbalanced emotions in the later development of mental disease was shown by Dr. Henry S. Sullivan, of Baltimore. Some young children are subjected to such experiences that they react to rage more than to any other emotion. These tend to grow up to become violent, aggressive, and epileptic types. Other young children have all their needs anticipated, and their chief emotion is self-satisfaction. They are not fitted to meet life, and often develop obsessional neuroses quite early. A third type has an infancy and childhood dominated by fear, and these develop defense reactions and set up barriers between themselves and the world.

Grave mental disorders of the dementia precox type are maladjustments to a social environment and not in any sense the outcome of hereditary factors, Dr. Sullivan declared.

Light on Freud

Latest developments in Freud's theories were explained by Dr. Bernard Glueck, psychoanalyst, of New York, who said, in effect, that each human being carries within himself a system of criminal justice. The system is highly individual, based on early training in the home. The normal person, who has learned to control and direct his instincts, gets off easily at his own bar of justice. The neurotic has tried to repress his instincts too much. He goes back and forth, either in his dreams or in reality, from over-indulgence to expiation.

Psychoanalysis is building up an anatomy and physiology of the mind very like the well known sciences of the body, Dr. William A. White, Superintendent of St. Elizabeth's Hospital at Washington, said in praising Dr. Glueck's interpretation. Psychoanalysis began twenty years ago by studying very sick, neurotic patients. Now it deals with a broader field. It should be part of the workaday equipment of every psychiatrist and should be held socially and professionally respectable, Dr. White declared.

Forestalling Epilepsy

Can the child who is destined to become a victim of epilepsy be picked out from other children and so treated that he will outwit the unhappy fate apparently mapped out for him? Dr. R. L. Dixon, of the Michigan Colony for Epileptics stated that in many cases this could be done.

Seven cases of twins were reported in which one developed epilepsy and the other did not. Each twin who was later seized with epileptic fits had not been getting along with other people and yet was highly self-satisfied. Violent fits of anger at trifling situations were common. By mental and emotional examinations school physicians and nurses could detect epileptic personality traits before such a child becomes a serious enough case to reach a family doctor, Dr. Dixon said. Study of the child's mental and physical condition and home life would then enable a mental hygiene expert to show how anti-social traits could be overcome.

Not all children that the neighbors label bad are, or will become, epileptics, he added. But marked epileptic traits combined with neurotic heredity need only an acute illness or a physical or mental shock to start the stage of epileptic convulsions.

Danger Signs Cited

The important question that hundreds of worried mothers put to doctors: "Will a baby that has convulsions become epileptic?" was asked and answered by Dr. William T. Shanahan, of the well known Craig Colony for epileptics.

One convulsion may not be a sign that a child is epileptic, but it may be the starting point toward this disease, he showed. The habit of convulsions can be formed like any other habit, and if seizures occur at intervals for long periods this itself is epilepsy. Convulsions without any apparent cause are more serious in forewarning of epilepsy than those due to teething or indigestion, but any convulsion is dangerous, since it may cause a brain hemorrhage and leave the nervous system less stable.

(Just turn the page)

Psychiatric Meeting

(*Continued from page 369*)

Why Are Convulsions?

Two scientists probing into the obscure changes which take place when the body is shaken by epileptic attacks, reported findings which may end in unmasking this mysterious malady. Dr. A. L. Skoog, of Kansas City, announced that he has found in the spinal fluid of persons suffering from various convulsive disorders a certain group of crystalline bodies. With further researches, this may lead to the discovery of a specific substance, peculiar to epilepsy alone, in the spinal fluid. It may also enable doctors to detect the person who is shamming epileptic fits, which sometimes puzzles experts examining the criminally insane.

Dr. Hans C. Syz, of Johns Hopkins University, told of experiments with frogs indicating that brain injury or asphyxiation reduces the power of the nerve cells to keep out harmful substances. In the injured or asphyxiated frog, a poison that causes convulsions is much more quickly absorbed into the brain and spinal tissues to work its havoc with the nerves.

Bouillon Treatment

Encouraging results with a bouillon as a remedy for epileptic patients were reported by Dr. J. Notkin, of the Manhattan State Hospital in New York. The soup, made from a bouillon cube containing bromide, salt, vegetable protein, and seasoning, is being given to thirty-two epileptics. All are having fewer convulsions, and some have none at all. The mental condition of the patients is considerably improved also, he said. This remedy, first introduced by a European physician and known as sedobrol, is more successful than ordinary bromide or luminal which are commonly given to epileptics, Dr. Notkin has found.

Troublesome Teeth

Infected teeth may play their usual role of villainy in epilepsy as in other diseases. Dr. E. B. Bass, of the Abilene State Hospital, Texas, reported a group of cases in which the storms of epileptic attacks were cured by curing diseased conditions of the stomach, and by removal of impacted teeth and curing other pathological conditions.

The question of whether the epileptic can be held responsible for damage done to society while he is in an epileptic spell was presented by Dr. George Donohoe, of Cherokee State Hospital, in Iowa. In some epileptics a state of automatism takes the place of a convulsive seizure or follows one, and such persons may commit serious crimes, though when the spell is over they are normal, law abiding citizens. Dr. Donohoe advocated that society should protect itself against the law breaking epileptic by placing him in an institution for criminal insane.

Starving the Enemy

A new theory of paresis, that "helpless and hopeless" stage of syphilis, was announced by a young psychiatrist from Ann Arbor, Dr. R. R. Dieterle. He has worked out a new method of examining the gray matter in the brain of paretics, and showing the presence and number of the tiny organisms that cause the disease. These microscope studies reveal that when the disease is acute and the patient becomes emaciated, as he generally does, the organisms migrate toward the blood vessels of the brain, desperately seeking enough of the food they need. Thus, Dr. Dieterle showed that if a patient can stand the severe ordeal of being reduced to skin and bones, the invading army will, by reason of its very numbers, be killed off by famine. When a paresis patient is inoculated with malaria or some other fever in an attempt to burn up the enemy organisms, the wasting away of the patient from the fever is an added factor in destroying the enemy. It is hoped that further researches will lead to discovery of the avenue by which the paresis organisms find their way to the brain, Dr. Dieterle said.

Body versus Mind

The proposition that an individual's body is a signpost to his mental tendencies was advanced by Dr. Clifford B. Farr, of the Pennsylvania Hospital. Results of physical measurements were reported by Dr. Farr, showing that the slender type is apt to be a quiet, reflective person, who fails to express ideas and emotions in action. The sturdy individual is more likely to be active and normally interested in the outer world.

Attention to physique may be important in childhood, he stated, since even inherited bodily tendencies may be normally developed, over-developed, or stamped out. Children of pronounced long, lean type should be encouraged to developed social traits, he said.

Poisons in Blood

Studies of the blood in mental attacks caused by disturbed metabolism, ill-functioning kidneys, and chronic infections were reported by Dr. Howard D. and Aurelia P. McIntyre, of Cincinnati. They found that in a number of cases of manic excitement, delirium, and acute mental confusion, the patients' blood showed chemical abnormality. When physical causes were traced and removed some patients recovered, mentally as well as physically. Those whose nerve cells had become seriously injuried by the poisons could not be restored, the physicians reported.

Dull Children "Wasted"

Significant figures from Massachusetts, significant because they show that almost every state must have thousands of feeble-minded children that are needlessly "wasted," were presented by Dr. Neil A. Dayton, of the Massachusetts Department of Mental Diseases. All children retarded three years in school are now examined by a psychiatrist, said Dr. Dayton, in describing the first successful attempt of a state to round up its entire new generations of the feeble-minded. Fourteen clinics travel around the state and six thousand feeble-minded children are being trained in special classes.

It is not a person's intelligence, but his character that determines whether he will make a useful, contented citizen, Dr. Dayton declared. Persistence, manual skill, honesty and normal conduct can be inculcated in the great majority of the feeble-minded.

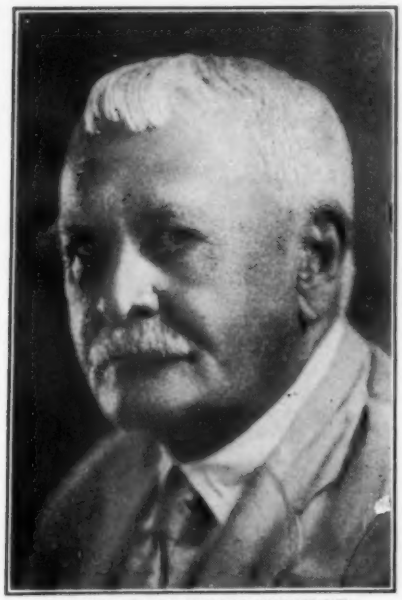
Youngest Child Brightest

Some plain facts on the much disputed question of whether young parents have brighter children and whether the oldest child in the family is really the most intelligent were presented by Prof. L. L. Thurstone, in a preliminary report of investigations in progress at the Institute for Juvenile Research. Study of 150 problem children shows that those born of younger parents rate about the same in intelligence as those born of older parents. Within the same family the second child born tends to be slightly brighter than the first, the third is brighter than the second, and this is equally true among the American and foreign born parents.

"It is sometimes said that when children come close together in age there may be a disadvantage to a child following close to the preceding

(*Continued on page 371*)

CHEMISTRY



CHARLES EDWARD MUNROE

Explosives Inventor

Every great explosion in America finds Dr. Munroe investigating it before the smoke blows away. Or perhaps one should say before its echoes die.

For Dr. Munroe invented the smokeless powder of our navy. He is the great authority on TNT and other such dangerous materials that most of us hardly dare to think about. From the seventies, when as professor at the Naval Academy, he hammered chemistry into the Navy, until now, when he steers research, as chief explosives chemist of the U. S. Bureau of Mines and chairman of the National Research Council's explosives committee, Dr. Munroe has contributed mightily to the chemical knowledge of the nation. Chemical manufacture has benefitted by his planning of the chemical censuses made by the government as well as his researches. His early experiments, when chemist to the U. S. Naval Torpedo Stations and War College, laid the foundation of the modern use of explosives. It was logical that Dr. Munroe was the government's chief advisor on explosives during the World War.

Yet his greatest works are not in the technical papers he has published or the dangerous experiments he has performed, but in the lives and achievements of those he has taught.

Thousands who have studied with him at Harvard, the Naval Academy and the George Washington University, have been inspired by him. He has the ability to unfold the vistas and ideals of science in such a way that those who see with him also accomplish.

Dr. Munroe is a forty-niner and since that year of his birth he has kept at the forefront of scientific exploration.

There is another picture, so often lacking in accounts of our intellectual leaders. Dr. Harvey W. Wiley, who took a special course with Dr. Munroe at Harvard in 1872, wrote in an appreciation:

"He loves his country home, its gardens, its orchards, and its surroundings. Going back each day from his work in the Bureau of Mines, he indulges in agricultural and horticultural pursuits. His home is a typically beautiful cottage and his garden and orchards are well kept and his lawn is properly mowed. As he sits on his lawn *sub tegmine fagi*, surrounded by his grandchildren, he presents the picture of a patriarch as noble and benignant as ever honored the homes of the chosen people of God."

Science News-Letter, June 11, 1927

Psychiatric Meeting

(*Continued from page 370*)

one," said Professor Thurstone, "but to my astonishment, I find that children one year apart seem to be as bright as those two or three years apart."

The study will be extended until 10,000 children have been classified, he stated.

Nurses Study Mental Cases

Newest ideas in hospital care for the mentally sick were reported by two psychiatrists. It can be truthfully said that a nurse is not adequately trained unless she has practical training in care of mentally diseased cases, declared Dr. C. A. Bonner, of Boston. Any physically ill person is always nervous, and a nurse who understands mental aspects of illness is better equipped, he said. The supply of nurses specializing in mental cases is entirely too low to care even for the army of mental patients. Six general hospitals are now sending nurses for three months intensive training to the Boston Psychopathic Hospital. The courses have already shown their value in improving nursing conditions for patients, he said.

New Hospital Ideas

The experiment of caring for mental patients in a general hospital has been tried and found successful, Dr. Thomas J. Heldt, of the Henry Ford Hospital in Detroit, reported. Any first-class general hospital should be able to care for certain types of nervous and mental patients, if it has a neuro-psychiatrist, he said. Many persons with mental troubles are coming willingly to the general hospital for treatment when they would have been alarmed at entering a mental institution. Dr. Heldt finds it possible to care for all types of cases, without even bars or locked doors, so long as proper supervision and care is provided. In the general hospital it is also possible to readily investigate and remedy any physical disorders, which are sometimes the fundamental cause of acute mental attacks.

Science News-Letter, June 11, 1927

ZOOLOGY—MEDICINE

Fish Tapeworm in U. S.

The dangerous fish tapeworm of Europe, the largest of those repulsive parasites that commonly attacks human beings, has become established in the United States, and is to be the object of special study this summer by a group of scientists backed by the National Research Council and under the immediate direction of Prof. H. B. Ward of the University of Illinois, foremost authority on internal parasites. They will go to the extreme northern part of Minnesota, which is the center of the threatened area in this country, and spend the summer tracing the connections of the infestation, which is complicated by the fact that the worms live part of their lives in fish and the rest in human beings and other warm-blooded creatures.

Fish tapeworm is a relatively common affliction among the peoples around the Baltic Sea, and is said to occur also to some extent in Switzerland. In some cases it does relatively little harm, while in others it introduces an extreme condition of pernicious anemia, which sometimes ends in death.

Prof. Ward states that the infestation was introduced by immigrant laborers in the iron and lumber industries, who not only carried the parasites internally but also imported their favorite dried and salt fish from the homelands. Salting does not kill the pest, and imperfect smoking also leaves it alive. There is evidence now, however, that the native fishes in some of the northern lakes may have become infested, and it is to ascertain the truth or falsity of these reports and to work out methods of keeping the infestation from spreading, that the expedition under Prof. Ward is to take the field this season.

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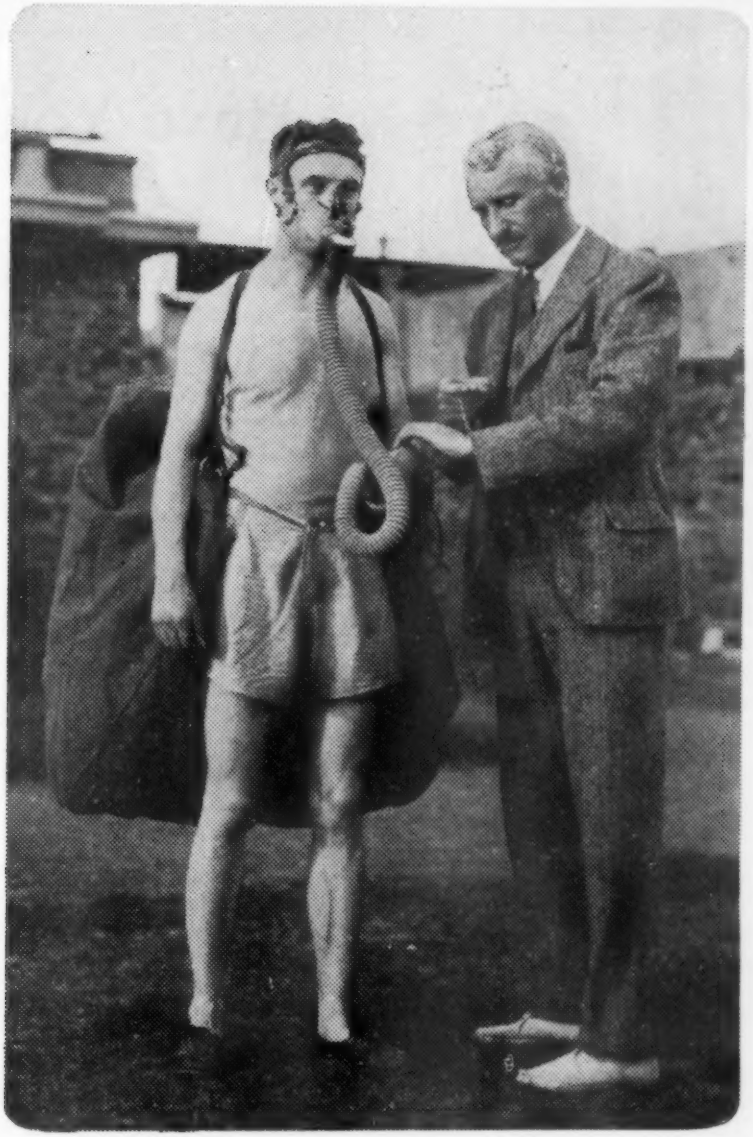


PROF. HILL TAKES THE PULSE of an athlete after running. As he runs he breathes into the bag on his back, and by analyzing the air, to determine dioxide in it, the scientist can measure the rate at which the runner used up his energy.

Science Helps Coaches

(*Continued from page 366*)

est speed of which he was capable. This verified Dr. Hill's expectation of the nature of the forces at work. His graphs were of just the same shape as those for the speed of a falling raindrop, which sinks faster and faster until it attains a constant speed at which the force of gravity on the drop is just equal to the resistance encountered.

"In the case of a sprinter the mechanics are the same," said Dr. Hill in propounding his theory of the short-distance race before fatigue sets in. "He exerts a constant force throughout the race, and is opposed by the friction of his body, which strictly speaking, is the viscosity of his muscles." Working on this assumption and using simple laws of physics, the physiologist proceeded to fit to the formula the observed times at which each of the coils on the track was reached. The calculated times checked with those observed to within a hundredth of a second, he found. This means that air resistance is a comparatively unimportant fraction of the whole, and that governing a runner's speed are the two balancing forces of the effort he exerts, which is constant, and the opposition he gets from his muscles, which is proportional to his speed. Both factors can be expressed in figures, and they are approximately constant for any one athlete, but different for different athletes. Considered together, the pair of figures are an exact index of a sprinter's performance and an analysis of his success.

What the Sprinter Needs

"The man who exerts but little driving power and possesses muscles with high friction will never make a sprinter," Dr. Hill explained. "Good runners should have either a high driving force or muscles operating with low viscosity. The man who has both will make the best showing of all."

Using the refined clocking method, candidates for a sprinting team can be sorted out on the basis of their grades with respect to each of these two measurable quantities, as expressed by numbers.

Dr. Hill has found that he can propel himself down the track with a force amounting to something over half of his body weight. A good sprinter may drive himself with an effort equal to 90 per cent. or even more of the weight of his body, it has been found. This amounts in the case of a 140 pound man, who can do the 100 yard dash in 10 seconds flat, to a work rate of seven horse-power, and involves as much energy as if he were shooting himself vertically into the air, with frictionless muscles, *at almost the same rate that* he goes horizontally along the ground!

To cope with such excessive power-demands as this, nature has arranged emergency chemical processes in the body which can be overloaded for a short time without ill effects. During excessively violent muscular effort, the glycogen, or animal starch of the body, is converted into lactic acid, permitting the release of huge quantities of energy. This, the same acid as that found in sour milk, is responsible for the sensation of fatigue as it accumulates. It is removed again with the oxygen the panting runner takes in when he sinks down to rest. "A man can go into debt for oxygen in this way to the extent of 15 quarts in a long race," said Dr. Hill. "After a 100 yard sprint a good performer requires at least five quarts of oxygen before the lactic acid, more than an ounce of it, has been cleared from the muscles.

Oxygen the Secret

"Speed in a middle distance run is determined by the amount of the oxygen debt a man can incur, and also by the amount he can take on as he goes along. Even the best athletes can take on only four quarts of oxygen a minute, so they soon go into debt, and when they get behind to the extent of the full 15 quarts, they are incapable of further effort. A runner's

(*Just turn the page*)

Science Helps Coaches

(*Continued from page* 373)

record times for the different middle distances can be correlated closely with his rate of intake of oxygen and the limit of his oxygen debt."

Dr. Hill's earlier researches into the science of athletics show that simple physiological experiments provide an explanation of the cardinal rules which coaches have laid down by long experience as the fundamentals for various track events. In discussing them, the scientist said: "In the case of human muscular movement, we find experimentally that about one movement a second with full force is cheapest. Rowers, by experience and from tradition, adopt just this speed of swing. Now we know why.

"To get the highest average speed out of a given store of energy, a runner should not save himself for a sprint finish, for adding 5 per cent. to the speed requires the expenditure of 20 per cent. more energy. It may be well to start rather fast, in order to force the body to a high working rate early in the race: otherwise a uniform speed throughout is best."

Broad Jumpers Go High

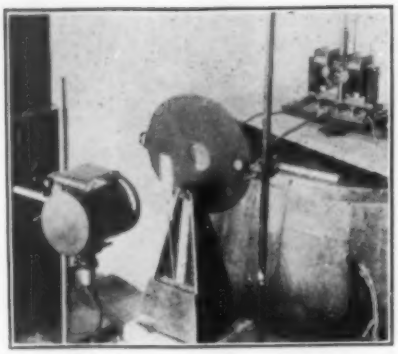
By timing jumpers, Professor Hill has found that all the complicated, violent movements of a high or broad jump are gone through in less than a second. Calculating from the time they are off the ground, record broad jumpers execute a creditable high jump as well. One must jump high to jump far.

Recent advances in the physiology of exercise and nutrition indicate what diets are most advisable in long distance performances. Sugar, the most readily available form of energy for the body furnace, should be taken on before demands are made on fat, the less easily used foodstuff, it has been shown.

Ultimately the researches may be extended to horse and whippet racing; and to rowing and bicycle contests. Other points the physiologists may explain are the influence of the suprarenal glands during a keen contest, which by secreting their potent juice at an abnormal rate into the blood stream, may whip up the body processes to a considerable extent.

Of scientific sport for its own sake, Dr. Hill expressed himself recently as follows: "The practice of athletics is both a science and an art, and just as art and science are the most potent ties tending to draw men together in a world of industrial competition, so sport and athletics, by urging men to friendly rivalry, may help to avert the bitterness resulting from less peaceful struggles. If, therefore, physiology can aid in the development of athletics as a science and an art, I think it will deserve well of mankind."

Science News-Letter, June 11, 1927



THE ELECTRICAL TIMER, which is set up in a room near the track. It records the electrical impulses from the coils of wire along the track as the runner goes by with a piece of magnetized steel on his belt.

HOW A RUNNER PICKS UP SPEED

Prof. Hill's results show that in a 60-yard run, an athlete can go

1 yard in .56 seconds
3 yards in .97 seconds
6 yards in 1.44 seconds
10 yards in 1.98 seconds
15 yards in 2.56 seconds
20 yards in 3.12 seconds
30 yards in 4.16 seconds
40 yards in 5.18 seconds
50 yards in 6.18 seconds
60 yards in 7.20 seconds

After the runner has gone about 30 yards, his speed becomes uniform.

In the southern hemisphere the shadow on a sun dial travels counterclockwise. As the hands of the earliest clocks moved in the direction of a sun dial shadow, our modern clocks would have hands moving from right to left if they had been first made in the southern hemisphere.

Whale meat tastes very much like beef.

Nero spent $150,000 on flowers for one banquet.

Fish are sometimes paralyzed by lightning for several days.

New tires for big English airplanes weigh 200 pounds each.

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EXPLORATIONS

Wilkins on Great Adventure

Capt. George H. Wilkins' proposed exploratory flight over the unknown Arctic area north of Alaska is "one of the most heroic and dramatic adventures of polar history" according to two other famous explorers, Commander Richard E. Byrd and Vilhjalmur Stefansson.

In a communication to the scientific magazine, *Science,* they point out that Capt. Wilkins, his pilot, Lieut. Ben Eielson, and their associates have already made striking contributions to science and the progress of northern aviation, although their program is only at its beginning.

On March 29 of this year Wilkins and Eielson made an exploratory flight and a forced landing about 500 miles from Point Barrow. During the two weeks' journey back over the ice, they added greatly to the knowledge of arctic conditions. Deep sea soundings that were made through the ice convinced them that it is improbable that there is undiscovered land in the 600,000 mile section to the northwest of Barrow.

For this reason, according to Byrd and Stefansson, "Wilkins now plans to cross the 300,000-mile section to the northeast, where there is the best remaining chance of land. He expects to fly diagonally through the middle of it from Barrow to 84° N. Lat. and 100° W. Long. and thence to Ellesmere Island, coming down when they have to or possibly flying nearly, if not quite, all the way to Etah.

"If the plane comes down anywhere on this route, Wilkins expects his party to live by hunting seals and make their way to the nearest inhabited land. This will be Alaska if they have hard luck and come down soon. It may be any of the Canadian islands, according to how far they succeed in flying; it will be Etah, northwest Greenland, if everything goes like clockwork. The outcome of the adventure can not be known before perhaps midsummer when Danish trading ships go up to Etah or the Canadian government ships go to Ellesmere Island. If nothing is heard then or before that time, it will mean either a fatal landing or a successful landing at a distance from which the party are returning, building snowhouses in winter, using skin tents in summer and living on sea game. Wilkins estimates the maximum time necessary for such a return on foot will be two years. We wish him luck with his great adventure."

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AGRICULTURE

Flood Sand Injures Land

Absolutely inert sand, requiring from eight to ten years to be modified to a point where even grass will grow, is one of the tragedies facing farmers in certain sections flooded by the Mississippi.

A report from B. R. Coad, government entomologist in charge of cotton insect investigations at Tallulah, La., states that inert sand covers several miles of the finest and most beautifully developed farming land of the Mississippi Delta, in the Scott district. Other similar but smaller sand deposits have been noted at various points of the flooded parts.

According to H. H. Bennett of the U. S. Bureau of Soils, such deposits of inert sand are made when the current of the rushing waters is slightly slowed down; as when it meets with a comparatively small obstruction. The sand is composed largely of quartz particles which, since they are rock fragments, are heavier than the fertile silt and clay content of the water. The sand content naturally separates itself first, while the silt and clay are carried along in the water and deposited when the current is further slowed down. The sand, due to its quartz make-up, is infertile and consequently for years nothing can be grown in areas where it is deposited. To remove it would be too expensive a proposition.

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BOTANY

Old Lotus Seeds Better

Seeds of the Indian lotus a hundred years old have more active life in them than the same kind of seeds of last year's crop, according to a report of Dr. Ichiro Ohga of the Educational Institute of Dairen, Manchuria, to the American Journal of Botany. Dr. Ohga tested these ancient seeds both by sprouting and by chemical examination, and they won on both counts. The research was carried on during Dr. Ohga's sojourn in this country, at the Boyce Thompson Institute, Yonkers.

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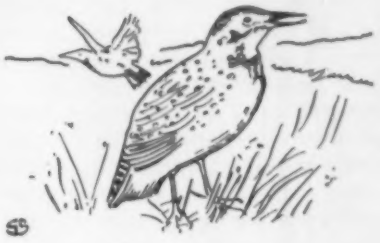
Thomas Jefferson, who made a number of useful inventions and who organized the U. S. Patent Office. never applied for any patent.

BIOLOGY

NATURE RAMBLINGS

By FRANK THONE



Meadow Lark

The biographer of St. Francis of Assisi relates that when his master lay dying, flocks of hooded larks came and sang around the house, as though in last greeting to one who had loved them. For while Francis loved all the birds God made, these larks, the scribe goes on to say, held first place in his affection.

Had this patron saint of naturalists, and of all folk who walk quietly through fields and woods, lived in America instead of Italy, he would have found in our meadow larks most worthy rivals of their relatives of the Old World. One who can deny himself to the small extent of getting up early (surely no very ascetic exercise!) will find it easy to follow the example of the gentle friar, and love the larks the best.

The American meadow lark is a fine, upstanding, sturdy bird, not conspicuously colored yet handsomely marked, with a dash of worldliness about his costume, in the black gorget set off by yellow. He does not aspire to towering song, as does the skylark, but rises singing to little heights and descends to earth again near the well-hidden nest among the grasses, where his mate is absorbed in family cares.

The meadowlark's nest is indeed a masterpiece in camouflage, as might be expected of a bird that thrives in spite of the fact that it makes its home in the most perilous of all places, right on the ground, exposed even to hungry beasts that can neither fly nor climb, which tree-dwelling birds escape. Human nest-hunters rarely find it, unless they almost step on it, so gray it is among the gray grasses and so still does the brooding mother sit even when you are within a few feet of her. Being a meadow lark calls for courage as well as singing ability.

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First Glances at New Books

YELENKA THE WISE and Other Folk Tales in Dramatic Form—Anne Charlotte Darlington—*Woman's Press* ($1.50). Colorful old legends of Russia, Greece and other European countries seem to "come alive" with surprising ease in this collection of little plays. The author has planned each production with a careful eye for what is practical stagecraft in amateur groups.

Science News-Letter, June 11, 1927

SYBILLA OR THE REVIVAL OF PROPHECY—C. A. Mace—*Dutton* ($1). Science, this psychologist assures us, is to play a rôle of growing importance, not only by adding to our mechanical marvels but by shaping and systematizing our mental and social processes. A cleverly written little book with many thought-provoking ideas.

Science News-Letter, June 11, 1927

ARTIFEX OR THE FUTURE OF CRAFTSMANSHIP—John Gloag—*Dutton* ($1). The craftsman of the past working independently at home is gone. But the craftsman of the future is pictured as combining handcraft and machine craft in a way which should bring satisfaction to the worker and produce well-constructed articles.

Science News-Letter, June 11, 1927

GOULD'S MEDICAL DICTIONARY—Edited by R. J. E. Scott—*P. Blakiston's Sons & Co.* ($9). A very complete new edition that makes an invaluable reference book for those engaged in work that deals with the medical and biological sciences.

Science News-Letter, June 11, 1927

DIGEST OF ELEMENTARY CHEMISTRY—Martin Mendel—*Globe*. A small volume which clearly and concisely sets forth such essential facts of chemistry as might be required for a college entrance examination.

Science News-Letter, June 11, 1927

MOLECULAR SPECTRA IN GASES—Report of Committee on Radiation in Gases — *National Research Council* ($4). An exhaustive treatise on an important phase of modern physics.

Science News-Letter, June 11, 1927

TRANSACTIONS OF THE AMERICAN GEOPHYSICAL UNION, 1926—*National Research Council* ($1.25). A full report of a meeting of interest to all concerned with the internal activities of our earth.

Science News-Letter, June 11, 1927

ECLIPSES OF THE SUN—S. A. Mitchell—*Columbia Univ.* ($5). Professor Mitchell, the distinguished director of the Leander McCormick Observatory of the University of Virginia, who is now in Norway preparing to observe his seventh eclipse of the sun on June 29, is probably America's chief authority on what happens when the moon momentarily hides the sun from earthly observers. In this book, the best work on the subject in English, he tells in detail the whys and the wherefores of eclipses, and lightens it by accounts of some of his interesting experiences while traveling more than 50,000 miles around the earth to observe them. The splendid illustrations, including color reproductions of the famous paintings of Howard Russell Butler, N. A., further augment the book's usefulness.

Science News-Letter, June 11, 1927

A GLOSSARY OF SEA TERMS—Gershom Bradford—*Yachting*. A useful volume that makes the language of the sea intelligible to landlubbers.

Science News-Letter, June 11, 1927

CELLULAR PHYSIOLOGY—W. J. V. Osterhout — *Yale University Press* ($1). The mechanism by which cells carry on their daily operations clearly and entertainingly explained.

Science News-Letter, June 11, 1927

TYPES OF MIND AND BODY—E. Miller—*Norton* ($1). A well-written little book describing current theories of mental and physical types and showing how these factors play their parts in shaping personality.

Science News-Letter, June 11, 1927

THE NATURE OF MAN—George A. Dorsey—*Harper* ($1). In his usual rapid, readable style, the author of "Why We Behave Like Human Beings" explains the biology and sociology of human nature.

Science News-Letter, June 11, 1927

THE STORY OF OUR COURTS—Gustav L. Schramm—*Univ. of Pittsburgh* ($.60). Originally given as a series of eight radio talks, these articles form a popular introduction to legal matters.

Science News-Letter, June 11, 1927

PHILOSOPHERS AND THEIR TIMES—Mont R. Gabbert—*Univ. of Pittsburgh* ($.60). Eight interesting radio talks on philosophers from Epicurus to Spencer.

Science News-Letter, June 11, 1927

CHEMICAL CALCULATIONS—Ernest L. Dinsmore—*Globe*. Methods of performing chemical computations are here clearly set forth.

Science News-Letter, June 11, 1927

A NATURALIST AT THE ZOO—E. G. Boulenger — *Brentano's*. The book was written especially for visitors to the Regents' Park Zoo at London, but it is done in such a bright, chatty, entertaining style that it will be read with pleasure in San Francisco, Sydney and all intermediate points. The sketches with which it is illustrated, by L. R. Brightwell, are of a kind that will elicit squeals of rapture from children anywhere—and make grown-ups wish they were still capable of squealing, too.

Science News-Letter, June 11, 1927

TWO SOULS IN ONE BODY? A Case of Dual Personality—Henry Herbert Goddard—*Dodd, Mead* ($2.50). The strange life of a young girl whose personality became split into two different characters, and how her case was cured and explained makes a book of absorbing interest. With such a story to tell, Dr. Goddard makes sure of capturing his readers' attention for his real point, which he emphasizes in a short preface, namely, that a large proportion of children become mentally or morally malformed as a result of maltreatment by parents and teachers who do not understand them.

Science News-Letter, June 11, 1927

THE SMELTS—W. C. Kendall — *U. S. Bur. Fisheries Doc.* 1015. A monograph useful to commercial fisheries interests as well as to the professional ichthyologists.

Science News-Letter, June 11, 1927

AN INTRODUCTION TO ANTHROPOLOGY — W. D. Wallis — *Harpers* ($3.75). Gathers together into one compact volume a great deal of hitherto almost inaccessibly scattered information about the ways and thoughts of primitive peoples.

Science News-Letter, June 11, 1927

THE ANT PEOPLE—Hans Heinz Ewers—*Dodd, Mead* ($3). A German disciple of Fabre has gone wherever there are ants (and that means all over the world) observing and making notes. The translation from the original has been done in very acceptable style by C. H. Levy.

Science News-Letter, June 11, 1927

THE PHYSIOLOGY OF PLANTS—G. J. Peirce—*Holt*. A straightforward and digestible presentation of the fundamentals of plant physiology. The handling of the vexed question of the ascent of the transpiration stream is especially to be commended. The total absence of illustrations, however, is something of a drawback.

Science News-Letter, June 11, 1927

The Purpose of Science Service

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Isn't It Odd is a weekly feature dealing with the oddities of the folk, little and big, in the world of Nature.

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SCIENCE SERVICE

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Anniversaries of Science

June 16, 1657—The first pendulum clock was presented by its maker, Christian Huyghens, to the states-general of Holland.

Christian Huyghens was a Dutch scientist of this period. He was born at the Hague in 1629 and excelled both as a physicist and a mathematician. One of his best-known pieces of work was his continuation of Galileo's researches on the pendulum. The original form of the pendulum was such that to obtain isochronism—that is to say, continuously equally-timed beats—it was necessary to have small swings in a circular arc. But as a result of Huyghen's investigations into the mathematical properties of the curve known as the cycloid he was able in 1658 to invent the cycloidal pendulum, and this was able to keep accurate time swinging over wide distances or amplitudes.

—Hart: *Makers of Science.*

June 17, 1832—William Crookes was born in London. He was among the pioneers in the study of radio-active phenomena.

In addition to their varying power of penetrating matter, there is another test which has proved of great service in analyzing the three types of rays from radio-active bodies and in determining the real nature of each. The trajectories of some of the rays are powerfully influenced by a magnet, others are slightly, and others not at all affected. Thus the Beta-rays of all radioactive substances if caused to traverse the space between the poles of a magnet are very strongly deflected, and if the magnet is a powerful one may be completely coiled up into closed circles or spirals. . . .

The Beta-rays are very similar in nature to the "Radiant Matter" (also called "cathode-rays" or "cathodestreams") of Sir William Crookes, obtained when an electric discharge or current is passed through a vessel exhausted to a very high degree of vacuum. . . . Thus the Beta-particle ejected from the radium atom was already known. It is true it is ejected more violently by radium than in any previously known case, but in its essential characteristics, its charge, or the quantity of electricity it carries, and its mass—it is the same particle as Sir William Crookes dealt with in his vacuum tubes thirty years ago. He christened them in a prophetic moment with the name of "Radiant Matter," and was, like many another prophet, ridiculed for his pains.

—Soddy: *The Interpretation of Radium.*

June 17, 1673—Rediscovery of the Mississippi River by Pére Jacques Marquette.

"Here we are, then, on this so renowned river, all of whose peculiar features I have endeavored to note carefully. The Mississippi River takes its rise in various lakes in the country of the Northern nations. It is narrow at the place where Miskous empties; its current, which flows southward, is slow and gentle. To the right is a large chain of very high mountains, and to the left are beautiful lands; in various places, the stream is divided by islands. On sounding we found ten brasses of water. Its width is very unequal; sometimes it is three-quarters of a league, and sometimes it narrows to three arpents. We gently followed its course, which runs toward the south and southeast, as far as the 42nd degree of latitude. Here we plainly saw that its aspect was completely changed. There are hardly any woods or mountains. The islands are more beautiful, and are covered with finer trees. We saw only deer and cattle, bustards and swans without wings, because they drop their plumage in this country. From time to time, we came upon monstrous fish, one of which struck our canoe with such violence that I thought that it was a great tree, about to break the canoe to pieces."—*Jesuit Relations.*

Science News-Letter, June 11, 1927

PSYCHOLOGY

Self-conscious Love

Quotation from SYBILLA or the Revival of Prophecy—C. A. Mace—Dutton.

We are gradually growing out of our emotions. We are acquiring self-consciousness and becoming habitually introspective, and, as the psychologists tell us, you cannot observe an emotion without decreasing its intensity.

This partly explains what is curious in what is called "modern love" as practiced and expounded by our younger novelists. It is essentially introspective. Every schoolboy knows what is going to happen when he falls in love. He knows about the illusions arising from emotion. The undergraduate cannot make love extravagantly, like the Elizabethan poets, or sentimentally, like the Victorians. When he feels the passion rising, he informs the provoking cause of it, that he knows quite well that, in spite of it, she is a perfectly ordinary little person with nothing very much to recommend her. They both agree that they are victims of an obsolescent mechanism designed for biological purposes, a mechanism primarily intended for the brutes, but annoyingly persistent in its control over civilized man. They agree, however, to act the performance through, because a rational way of making love is difficult to devise. They agree to make senseless and meaningless remarks. He is prepared to rave about her perfectly beautiful eyes, whilst rationally convinced that they show a distinct suspicion of squint. She in her turn will admire his manly form, whilst fully conscious that he is rather undersized and remembering that he signally failed to get his Blue. The kind of objective attitude that we are being taught to adopt toward criminals, which the psycho-analysts tell us to adopt towards the libertine, sooner or later we shall have to adopt towards ourselves.

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PALEONTOLOGY

The Diplo-doclodipus

A sad young Eohippus, once,
  Who pattered through the gorse,
Was sobbing as he pattered, for
His fondest hopes were shattered, for
He'd failed in all that mattered, for
  He wasn't yet a Horse.

He met a bulky friend of his,
  A looming mass of force,
A jaunty Diplodocus
With a yellow, blooming crocus
In his buttonhole, to focus
  The public gaze, of course.

"I say, what makes you snivel so,
  My little Eohip?
Why all the silly signs of woe?
There's no need to dissemble so!
What makes the tremors tremble so
  Upon your lower lip?"

"Oh," cried the wretched Eohip,
  "I'm dying from remorse!
Although I've been selected to,
And eagerly expected to,
Perversly I've neglected to
  Evolve into a Horse.

"Poor thing!" the Diplodocus laughed,
  "You're too unenergetic!
Now, *me, I'm* on the very brink
Of evolution, which, I think,
Will make these other reptiles shrink
  And feel apologetic!

"As you're my friend, and wouldn't say
  A word derogatory,
I'll tell you, little Eohip:
I'm going to be a Doclodip;
A great big, hulking Doclodip,
  A burly beast of glory!"

As he had said he'd do, he did,
  This dinosaur persistent.
But when the Doclodip arrived,
All nature, so it seemed, connived
To see no single bone survived
  To prove he'd been existent!

The Eohippus, losing toes,
  Because he couldn't add 'em,
No longer patters through the gorse,
For, by a mighty tour-de-force,
He's finally become a horse,
  And gallops on macadam!

—*Richard Ashman.*

Science News-Letter, June 11, 1927

There are about 4,500,000 more automobiles than telephones in the United States.

Fancy safety pins made by craftsmen of the Bronze Age sometimes weighed half a pound.

Summer is Nature's Own Time——

The Science News-Letter Is Therefore Pleased To Announce

SPECIAL OUT-OF-DOORS PAGES

These nature pages will be prepared by leading nature-study and outdoors experts under the supervision of the Coordinating Council on Nature Activities, an organization that brings together leading societies and institutions interested in a proper understanding of the great outdoors. The pages, full of wood lore and useful interpretation of forest, field and garden, will appear during June and August, beginning next week.

Other News-Letter Features Scheduled for June and July

Nature Ramblings (a weekly nature note by Dr. Frank Thone).

Star Charts of Summer Heavens (an explanation of the stars by James Stokley).

Europe's Total Eclipse of the Sun (explained and reported by Prof. S. A. Mitchell, leader of America's only expedition).

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